

WE CLAIM:

1. A method of large-scale fault-tolerant audio conferencing in a purely packet-switched audio conferencing system, said method comprising the steps of:

5 placing a call from an endpoint to a conference gatekeeper, said call indicating an audio conference;

querying a CACS from said conference gatekeeper for routing instructions for said audio conference;

determining in said CACS whether said audio conference is active;

10 selecting in said CACS an MCU to host said audio conference when said audio conference is inactive;

selecting in said CACS an MCU hosting said audio conference when said audio conference is active;

15 responding from said CACS to said endpoint with said queried routing instructions, said queried routing instructions indicating said selected MCU;

connecting said endpoint to said selected MCU;

mixing input from all endpoints in said audio conference to form a voice stream; and

20 returning said voice stream to each endpoint in said audio conference.

2. The method of claim 1 wherein the step of placing a call links said endpoint to said conference gatekeeper through a gatekeeper cloud.

3. The method of claim 1 wherein the step of placing a call links said endpoint to said conference gatekeeper through said packet-switched network.

4. The method of claim 1 wherein the routing instructions include at least an LCF signal indicating the selected MCU.

5. The method of claim 1 wherein the call includes at least an LRQ signal.

6. The method of claim 1 further comprising the steps of:
determining in said CACS whether the call from said endpoint contains adequate information to establish said audio conference;
responding from said CACS to said endpoint with routing instructions to an IVR server when there is inadequate information to establish said audio conference;

connecting said endpoint to said IVR server when there is inadequate information to route said call;

10 gathering in said IVR server, after connecting said endpoint to said IVR server, adequate information to establish said audio conference; and

transferring said endpoint from said IVR server to said selected MCU after said IVR server gathers said adequate information.

7. The method of claim 1 further having a dial-out method comprising the steps of:

5 initiating a call request from said selected MCU to said conference gatekeeper, said call request indicating an additional endpoint;

transmitting an LRQ from the conference gatekeeper to the gatekeeper cloud;

10 returning a destination address to said conference gatekeeper from said gatekeeper cloud, said destination address corresponding to said additional endpoint;

forwarding said destination address from said conference gatekeeper to said selected MCU;

15 establishing a point-to-point call from said MCU to said additional endpoint based on said destination address, thereby bringing said additional endpoint into said audio conference.

8. The method of claim 1 further supporting full service audio conferencing using a reservation system and a call agent.

9. The method of claim 8 wherein the reservation system and the call agent are tightly integrated.

10. The method of claim 8 wherein the reservation system and the call agent are loosely integrated.

11. The method of claim 1 wherein said selected MCU is selected from an MCU pool.

12. The method of claim 1 further including the step of dynamically routing an operator voice path to service multiple MCUs.

13. The method of claim 1 further including the step of renegotiating the destination of a voice path to move an audio conference participant from said selected MCU to a second MCU.

14. The method of claim 1 further including the step of moving said audio conference from said selected MCU to a second MCU.
15. The method of claim 1 further including the steps of:
 - providing said audio conference to a streaming protocol server from said selected MCU;
 - connecting a passive participant to said streaming protocol server; and
 - broadcasting said audio conference from said streaming protocol server to a passive participant.
16. A large-scale fault-tolerant purely packet-switched audio conferencing method, said method comprising the steps of:
 - establishing an audio conference by:
 - connecting an endpoint to a conference gatekeeper, said endpoint indicating an audio conference;
 - querying a CACS from said conference gatekeeper for routing instructions for said audio conference;
 - determining in said CACS the status of said audio conference;
 - selecting in said CACS an MCU to host said audio conference when said status of said audio conference is inactive;
 - selecting in said CACS an MCU hosting said audio conference when said status of said audio conference is active;
 - responding from said CACS to said endpoint with said queried routing instructions, said queried routing instructions indicating said selected MCU;

connecting said endpoint to said audio conference through said selected MCU;

20 mixing input from all endpoints in said audio conference to form a voice stream;

returning said voice stream to each endpoint in said audio conference; and

25 dialing out from the audio conference when said status of said audio conference is active to connect additional endpoints to the audio conference by:

30 initiating in the endpoint connected to said audio conference a call request from said selected MCU to said conference gatekeeper, said call request indicating said additional endpoint;

transmitting an LRQ from the conference gatekeeper to the gatekeeper cloud;

35 returning a destination address to said conference gatekeeper from said gatekeeper cloud, said destination address corresponding to said additional endpoint;

forwarding said destination address from said conference gatekeeper to said selected MCU;

40 establishing a point-to-point call from said MCU to said additional endpoint based on said destination address, thereby bringing said additional endpoint into said audio conference.

17. The method of claim 16 further comprising the steps of:
 - determining in said CACS whether the call from said endpoint contains adequate information to establish said audio conference;

5 responding from said CACS to said endpoint with routing instructions to an IVR server when there is inadequate information to establish said audio conference;

connecting said endpoint to said IVR server when there is inadequate information to route said call;

10 gathering in said IVR server, after connecting said endpoint to said IVR server, adequate information to establish said audio conference; and

transferring said endpoint from said IVR server to said selected MCU after said IVR server gathers said adequate information.

18. The method of claim 16 further supporting full service audio conferencing using a reservation system and a call agent.

19. The method of claim 16 wherein said selected MCU is selected from an MCU pool.

20. The method of claim 16 further including the step of dynamically routing an operator voice path to service multiple MCUs.

21. The method of claim 16 further including the step of renegotiating the destination of a voice path to move an audio conference participant from said selected MCU to a second MCU.

22. The method of claim 16 further including the step of moving said audio conference from said selected MCU to a second MCU.

23. The method of claim 16 further including the steps of:

providing said audio conference to a streaming protocol server from said selected MCU;

5 connecting a passive participant to said streaming protocol server; and

broadcasting said audio conference from said streaming protocol server to a passive participant.

24. A large-scale fault-tolerant audio conferencing method over a purely packet-switched network, said method comprising the steps of:

initiating a call from an endpoint to a conference gatekeeper;

5 querying a CACS from said conference gatekeeper for routing instructions for an audio conference;

determining in said CACS whether the call from said endpoint contains adequate information to establish said audio conference;

10 responding from said CACS to said endpoint with routing instructions to an IVR server when there is inadequate information to establish said audio conference;

connecting said endpoint to said IVR server when there is inadequate information to route said call and:

gathering in said IVR server adequate information to establish said audio conference; and

15 transferring said adequate information to the CACS;

determining in said CACS the status of said audio conference;

selecting in said CACS an MCU to host said audio conference when said status of said audio conference is inactive;

20 selecting in said CACS an MCU hosting said audio conference when said status of said audio conference is active;

responding from said CACS to said endpoint with said queried routing instructions, said queried routing instructions indicating said selected MCU;

25 transferring said endpoint from said IVR server to said audio conference at said selected MCU when there is inadequate information to route the call; and

 connecting said endpoint to said audio conference at said MCU when there is adequate information to route the call.

25. The method of claim 24 further supporting full service audio conferencing using a reservation system and a call agent.

26. The method of claim 24 wherein said selected MCU is selected from an MCU pool.

27. The method of claim 24 further including the step of dynamically routing an operator voice path to service multiple MCUs.

28. The method of claim 24 further including the step of renegotiating the destination of a voice path to move an audio conference participant from said selected MCU to a second MCU.

29. The method of claim 24 further including the step of moving said audio conference from said selected MCU to a second MCU.

30. The method of claim 24 further including the steps of:
 providing said audio conference to a streaming protocol server from said selected MCU;

5 connecting a passive participant to said streaming protocol server; and

broadcasting said audio conference from said streaming protocol server to a passive participant.

31. A large-scale fault-tolerant audio conferencing method in a purely packet-switched network, said method comprising the steps of:

initiating a call from an endpoint to a conference gatekeeper in a gatekeeper cloud;

5 querying a CACS from said conference gatekeeper for routing instructions for an audio conference;

determining in said CACS whether the call from said endpoint contains adequate information to establish said audio conference;

10 responding from said CACS to said endpoint with routing instructions to an IVR server when there is inadequate information to establish said audio conference;

connecting said endpoint to said IVR server when there is inadequate information to route said call and:

15 gathering in said IVR server adequate information to establish said audio conference; and

transferring said adequate information to the CACS;

determining in said CACS the status of said audio conference;

selecting in said CACS a conference MCU from an MCU pool, said conference MCU hosting said audio conference when said status 20 of said audio conference is inactive;

selecting in said CACS a conference MCU from an MCU pool, said conference MCU hosting said audio conference when said status of said audio conference is active;

- 25 responding from said CACS to said endpoint with said queried routing instructions, said queried routing instructions indicating said selected MCU;
- transferring said endpoint from said IVR server to said audio conference at said selected conference MCU when there is inadequate information to route the call;
- 30 connecting said endpoint to said audio conference at said conference MCU when there is adequate information to route the call, once said endpoint is connected to said audio conference, said audio conference:
- supporting full service conferencing in said audio conference to said endpoint with a reservation system and a call agent;
- 35 supporting dynamically routed audio signals within said packet-switched network;
- supporting passive participants in said packet-switched network
- 40 supporting dial out from said audio conference to an additional endpoint.